

Name: _____

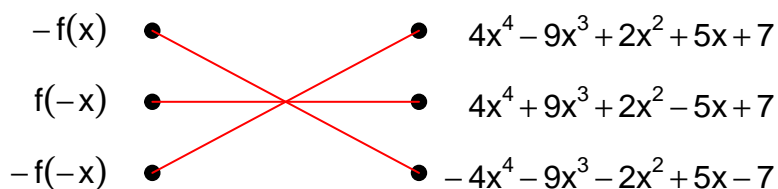
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Exam: Function Reflections (Solution version 44)

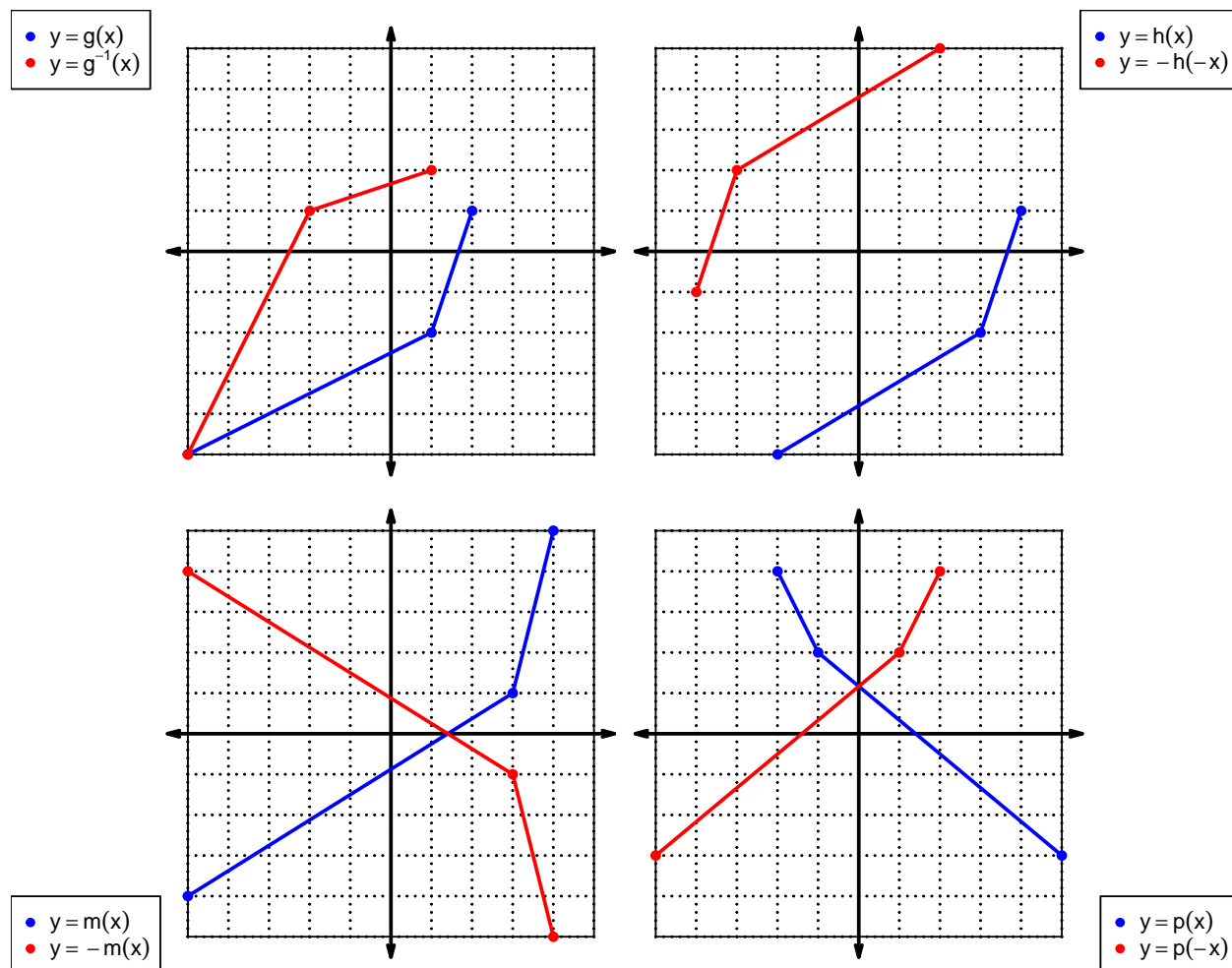
1. Let function f be defined by the polynomial below:

$$f(x) = -4x^4 + 9x^3 - 2x^2 - 5x - 7$$

Draw lines that match each function reflection with its polynomial:

Reflections**Polynomials**

2. In each xy plane shown below, a function is graphed with blue. Draw the indicated reflections (as a second curve, indicated in legend) with black (or with whatever you have). The x axis is horizontal and the y axis is vertical (as typical), and the scale is equal on both axes.



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For all questions on this page, the functions f , g , and h are defined by the table below.

x	$f(x)$	$g(x)$	$h(x)$
1	8	7	6
2	5	1	9
3	4	9	2
4	6	2	5
5	1	3	7
6	9	5	4
7	2	4	8
8	3	6	1
9	7	8	3

3. Evaluate $h(5)$.

$$h(5) = 7$$

4. Evaluate $g^{-1}(8)$.

$$g^{-1}(8) = 9$$

5. By filling more rows of the table, it is possible to make function g **odd**. If that were done, what would be the value of $g(-6)$?

If function g is odd, then

$$g(-6) = -5$$

6. By filling more rows of the table, it is possible to make function f **even**. If that were done, what would be the value of $f(-3)$?

If function f is even, then

$$f(-3) = 4$$

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7. A function, f , is **even** if $f(x) = f(-x)$ for all x in the domain. A function, g , is **odd** if $g(x) = -g(-x)$ for all x in the domain.

Let polynomial p be defined with the following equation:

$$p(x) = x^2 - x$$

- a. Express $p(-x)$ as a polynomial in standard form.

$$p(-x) = (-x)^2 - (-x)$$

$$p(-x) = x^2 + x$$

- b. Express $-p(-x)$ as a polynomial in standard form.

$$-p(-x) = -(x^2 + x)$$

$$-p(-x) = -x^2 - x$$

- c. Is polynomial p even, odd, or neither?

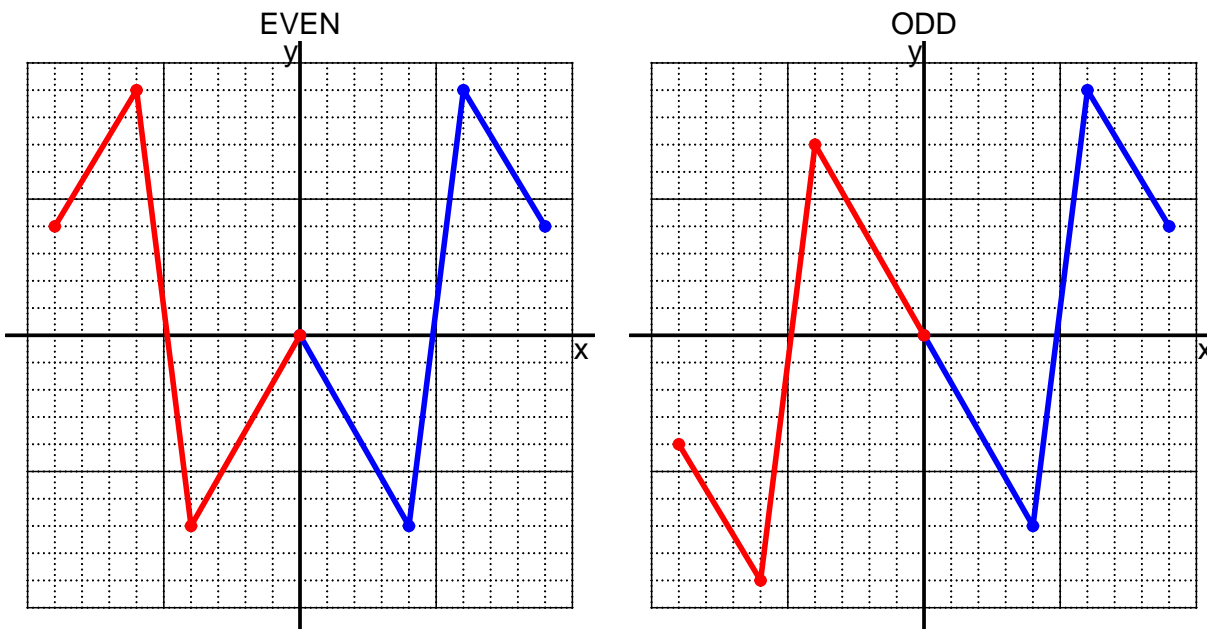
neither

- d. Explain how you know the answer to part c.

We see that $p(x)$ is not equivalent to either $p(-x)$ or $-p(-x)$, so p is neither even nor odd.

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8. I have drawn half of a function. Draw the other half to make it even or odd.



9. Let function f be defined with the equation below.

$$f(x) = 2(x + 6)$$

a. Evaluate $f(10)$.

step 1: add 6
step 2: multiply by 2

$$f(10) = 2((10) + 6)$$

$$f(10) = 32$$

b. Evaluate $f^{-1}(94)$.

step 1: divide by 2
step 2: subtract 6

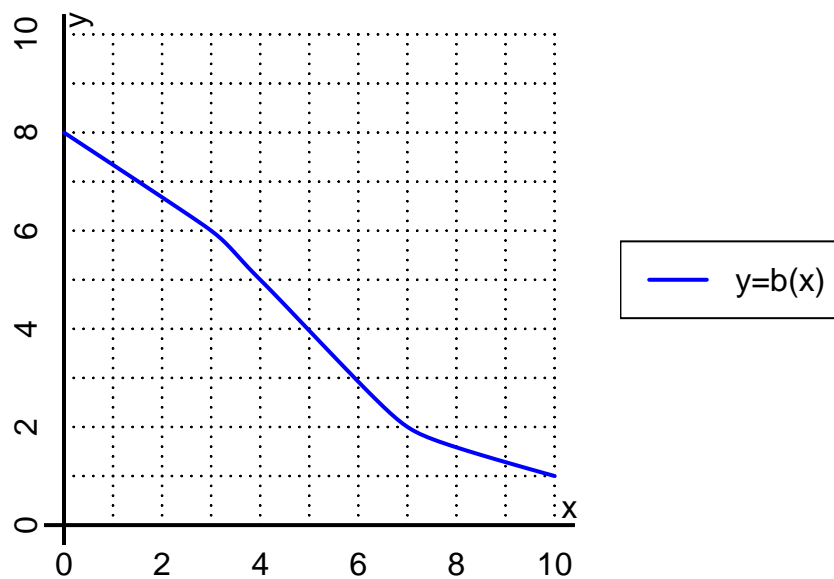
$$f^{-1}(x) = \frac{x}{2} - 6$$

$$f^{-1}(94) = \frac{(94)}{2} - 6$$

$$f^{-1}(94) = 41$$

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10. The function b is represented by the curve $y = b(x)$ graphed below.



a. Evaluate $b(4)$.

$$b(4) = 5$$

b. Evaluate $b^{-1}(6)$.

$$b^{-1}(6) = 3$$

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11. Function f is defined by the table below.

a. Complete the columns for $-f(x)$ and $f(-x)$ and $-f(-x)$.

x	$f(x)$	$-f(x)$	$f(-x)$	$-f(-x)$
-2	-4	4	4	-4
-1	3	-3	-3	3
0	0	0	0	0
1	-3	3	3	-3
2	4	-4	-4	4

b. Is function f even, odd, or neither?

odd

c. How do you know the answer to part b?

Function f is odd because column $-f(-x)$ matches column $f(x)$ exactly.